

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
27 January 2005 (27.01.2005)

PCT

(10) International Publication Number  
**WO 2005/007490 A1**

(51) International Patent Classification<sup>7</sup>: **B62D 15/02, G08G 1/16**

(21) International Application Number:  
**PCT/JP2004/010454**

(22) International Filing Date: **15 July 2004 (15.07.2004)**

(25) Filing Language: **English**

(26) Publication Language: **English**

(30) Priority Data:  
**2003-200574 23 July 2003 (23.07.2003) JP**

(71) Applicants (*for all designated States except US*): **TOYOTA JIDOSHA KABUSHIKI KAISHA [JP/JP]; 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). AISIN SEIKI KABUSHIKI KAISHA [JP/JP]; 1, Asahi-machi 2-chome, Kariya-shi, Aichi 4488650 (JP).**

(72) Inventors; and

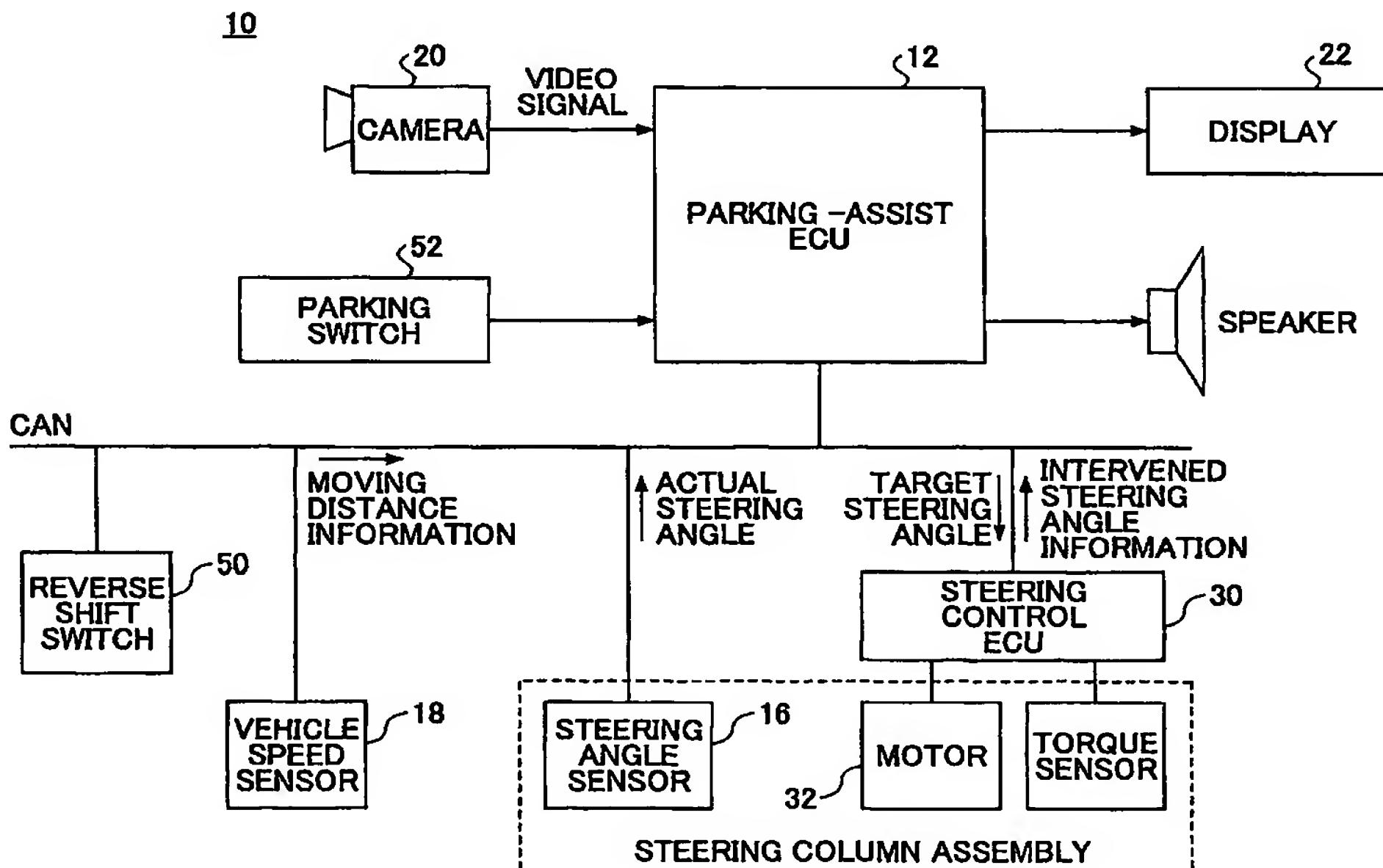
(75) Inventors/Applicants (*for US only*): **ENDO, Tomohiko [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). SATONAKA, Hisashi [JP/JP]; c/o TOYOTA JIDOSHA**

**KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). KUBOTA, Yuichi [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). MATSUI, Akira [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). IWAKIRI, Hideyuki [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). SUGIYAMA, Toru [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). KAWAKAMI, Seiji [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). IWAZAKI, Katsuhiko [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). KATAOKA, Hiroaki [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). TANAKA, Yuu [JP/JP]; c/o AISIN SEIKI KABUSHIKI KAISHA, 1, Asahi-machi 2-chome, Kariya-shi, Aichi 4488650 (JP).**

(74) Agent: **ITOH, Tadahiko; 32nd Floor, Yebisu Garden Place Tower, 20-3, Ebisu 4-chome, Shibuya-ku, Tokyo 1506032 (JP).**

*[Continued on next page]*

(54) Title: GUIDING DEVICE FOR GUIDING VEHICLE TO TARGET PLACE BY CONTROLLING THE STEERING ANGLE



WO 2005/007490 A1

(57) Abstract: A guiding device is disclosed for guiding a vehicle to a target position by controlling the steering angle while estimating the vehicle position at least based on a steering angle value, characterized in that, in estimating the vehicle position, a slowing operation with respect to a change  $dp$  in a moving distance of the vehicle is applied to a turning curvature  $g(Str(p))$  estimated based on the steering angle value in order to compensate for the delay due to tire deformation, whereby the delay-compensated turning curvature  $y(p)$  is obtained.



- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,

ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*